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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,115	12/10/2003	David Edwin Budinger	839-1497	2833

30024 7590 04/03/2007

NIXON & VANDERHYE P.C.
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
CARRILLO, BIBI SHARIDAN	
ART UNIT	PAPER NUMBER
1746	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/731,115	BUDINGER ET AL.	
	Examiner	Art Unit	
	Sharidan Carrillo	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 15 are indefinite because it is unclear what is meant by "reaction products between hydrogen gas and surface contaminants or surface oxides ". What is the difference between surface contaminants or surface oxides and reaction products? Specifically, what are the reaction products? Claim 10 is indefinite because "the component" lacks positive antecedent basis. Claim 19 is indefinite because "the component" lacks positive antecedent basis. Step e of claim 19 is indefinite because "the temperature of the article" lacks positive antecedent basis.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 11, 13-14, 19-20, and 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakayama et al. (5505794).

Nakayama et al. teach disposing of an article W in a furnace 102, heating the article in the furnace and repetitively cycling hydrogen gas and a vacuum within the furnace by supplying in each cycle a fresh supply of hydrogen gas (col. 1, lines 10-55). In col. 2, lines 30-35, Nakayama teaches adding hydrogen and removing hydrogen from the furnace and repeatedly performing the steps. Re claims 2-3, 20, Nakayama teaches vacuum pressure of 1X10-4, which is equivalent to 0.1micron. Re claims 11, 26, refer to col. 7, lines 15-22. Re claim 13, refer to col. 7, line 13. Re claim 14, refer to col. 8, line 36. Re claims 19 and 27 and in view of the indefiniteness, the limitations are met by Nakayama. Specifically, Nakayama teaches introducing the article W (i.e. alloy) in the furnace (Example 3), heating the alloy in the furnace, thereby raising the temperature of the test material, introducing hydrogen gas to the furnace to obtain a partial pressure within the furnace, evacuating the furnace to release the hydrogen gas and repeatedly performing the cycle again (col. 8, lines 23-56, col. 2, lines 30-35). Re claim 25, refer to col. 8, lines 35-37).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 4-10 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al. (5505794).

Re claims 10, 21-23, Nakayama fails to teach heating the component within the furnace to a temperature about 1400F, about 1800F or higher. However, in col. 1, lines 35-40, Nakayama teaches it is well known and conventional to meat the metallic material at elevated temperatures ranging from 500-1000C. Re step c of claim 10, Nakayama teaches temperatures of 830C (col. 7, lines 10-14). It would have been within the level of the skilled artisan to have modified the method of Nakayama to include higher temperatures since Nakayama teaches it is well known and conventional to meat the metallic material at elevated temperatures ranging from 500-1000C. Re claims 4-5, Nakayama fails to teach the specified pressure of hydrogen gas. However,

in the absence of a showing of criticality, it would have been within the level of the skilled artisan to adjust the pressure of the gas depending upon the flow rate o f the gas, the type of contaminants to be removed and the temperature within the furnace. Re claims 6-9, Nakayama teaches a vacuum pressure of 1X10-4 torr which is equivalent to 0.1 micron.

8. Claims 1, 10, 13-15, 19, 21-25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. (6042898).

Re claims 1, 15, 19, and 27, Burns teaches a method of cleaning a superalloy 10 with an ionized gas stream cleaning process (abstract) to remove undesired oxides and contaminants. Col. 3, lines 30-col. 4, line 20 teaches placing the turbine blade 2 in a vacuum chamber, reducing the pressure inside the chamber, flowing an inert gas and heating the chamber at a pressure of about 4.0kPa-5-3kPa and a temperature of about 1400-1600F. Re claim 1, Burns fails to teach a repetitive cycle. However, it would have been within the level of the skilled artisan to repeat the cycle in order to further remove contaminants represent on the workpiece and within the furnace. It is notoriously well known to clean a component by employing multiple vacuum/hydrogen cycles as evidenced by Pietruska et al. (5549767).

Re claims 10 and 21-22, refer to col. 3, lines 55-60. Re step d of claim 15, refer to col. 4, lines 24-35. Re claims 13-14, and 25, col. 4, lines 7-10 teaches that the cleaning time is variable. Re claims 23-24, Burns teaches about 1600C. Burns fails to teach the claimed temperature. However, in the absence of a showing of criticality, it

would have been within the level of the skilled artisan to adjust the temperature depending upon the type of article cleaned and the pressure within the chamber.

9. Claims 1, 4, 11-15, 19, and 23-25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. (US2004/0261923).

Re claims 1, 15, 19, and 27, Burns teaches heat treating coated turbine components by disposing the workpiece in a furnace 13, heating the article within the furnace to a temperature of 2000F and introducing an inert gas, such as hydrogen gas (paragraphs 20-21). Paragraph 20 teaches removal of contaminants by a vacuum pump 30 (paragraph 23). Re step d of claim 15, Burns teaches performing a finishing operation, such as peening to form a coating after the heat treatment step (paragraph 22).

Burns fails to teach a repetitive cycle. However, it would have been within the level of the skilled artisan to repeat the cycle in order to further remove contaminants represent on the workpiece and within the furnace. It is notoriously well known to clean a component by employing multiple vacuum/hydrogen cycles as evidenced by Pietruska et al. (5549767). Re claims 4 ,13-14, and 23-25, refer to paragraph 21. Re claim 11, Burns teaches cleaning the workpiece and followed by a diffusion heat treatment step. Re claim 11, one would reasonably expect the workpiece to be cooled prior to removal from the furnace. Re claim 12, paragraph 22 teaches forming a coating after the heat treatment step.

Allowable Subject Matter

10. Claims 16-18 and 28 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is an examiner's statement of reasons for allowance: The prior art fails to teach the pressures recited in claims 16-18 and temperature limitations recited in claim 28.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pagonic teaches a vacuum and inert gas apparatus. Reed et al. teach heating with hydrogen gas. Moslehi teaches low temperature cleaning. Friedt teaches purging with vacuum and gas to remove contaminants. Chesnes teaches a diffusion heat treatment. Burns teaches heat treatment of workpieces.

13. Upon further review of the claims, the examiner has decided to withdraw the restriction requirement. Therefore, claims 1-28 are examined.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 571-272-1297. The examiner can normally be reached on M-W 6:30-4:00pm, alternating Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sharidan Carrillo
Primary Examiner
Art Unit 1746

bsc

SHARIDAN CARRILLO
PRIMARY EXAMINER